Confirmation No. 3088

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	HESEN *et al.*	Examiner:	Chhaya, S.
Serial No.:	10/560,447	Group Art Unit:	2895
Filed:	December 12, 2005	Docket No.:	NL030692US1 (NXPS.316PA)
Title:	LEAD FRAME, METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE		

REPLY BRIEF

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Dear Sir:

This is a Reply Brief submitted pursuant to 37 C.F.R. § 41.41(a)(1) for the above-referenced patent application. This Reply Brief is submitted in response to the Examiner's Answer dated March 31, 2010, and in further response to the Final Office Action dated June 26, 2009.

Only if required, authorization is given to charge/credit Deposit Account 50-4019 (NL030692US1) any requisite fees/overages to enter this paper.

I. Status of Claims

Claims 1-10 and 12-16 stand rejected and are presented for appeal. Claim 11 has been cancelled.

II. Grounds of Rejection

The grounds of rejection to be reviewed on appeal are as follows:

A. Claims 1-7, 9-13 and 15 stand rejected under 35 U.S.C. § 102(b) over Coldren (U.S. Patent No. 4,252,864).

B. Claims 8 and 14 stand rejected under 35 U.S.C. § 103(a) over the '864 reference in view of Sakamoto (U.S. Patent No. 6,975,022).

III. Appellant's Reply Argument

The Examiner's rejections of record should be overturned for lack of prior art correspondence to Appellant's claimed invention and lack of motivation as the asserted reference actually teaches away. The Examiner has not specifically alleged aspects of the rejections relating to connection conductors and underlying support structures and has thus failed to establish correspondence thereto. In some instances, it appears that the Examiner is relying upon connection conductors coupled to an upper surface of a chip as corresponding to the claimed (opposite-side) connection conductors. In other instances, it appears that the Examiner is relying upon a central area of an underlying support structure as an "end" of a connection conductor. In either instance, the rejections fail to establish correspondence under §§ 102 or 103, and generally rely upon an impermissible interpretation of partial claim limitations that fails to establish correspondence to the claims as a whole. Moreover, the Examiner has ignored various claim limitations and failed to address Appellant's traversals regarding the lack of correspondence and the cited references' teaching away from the claimed invention (and any modification in accordance with the same). The following summarizes aspects of this lack of correspondence in greater detail, as well as the impropriety of the rejections under § 103 in view of the lack of motivation/teaching away in the references themselves, as presented in greater detail in the Appeal Brief, which is incorporated herein by reference.

A. The § 102(b) Rejections Have Failed To Establish Correspondence; The '864 Reference Does Not Disclose Limitations Including Connectors Coupled To "Opposite Sides" Of, Or Securing, A Semiconductor Element.

As applicable to all claim rejections, the cited connectors 62 and74 in the '864 reference, which connect to immediately adjacent portions of a common chip surface, do not correspond to claim limitations directed to connectors that are positioned on opposite sides of a semiconductor element, and to securing the semiconductor element between the connectors. As shown in Figure 5 (copied below for convenience), cited end portions 62 and 74 of the '864 reference connect to the same side of a chip (such as shown in Fig. 3) placed on support 34, with end portion 74 used to hold the chip and end portion 62 extending into an opening 70 of end portion 74 to make contact to an inner portion of the chip.

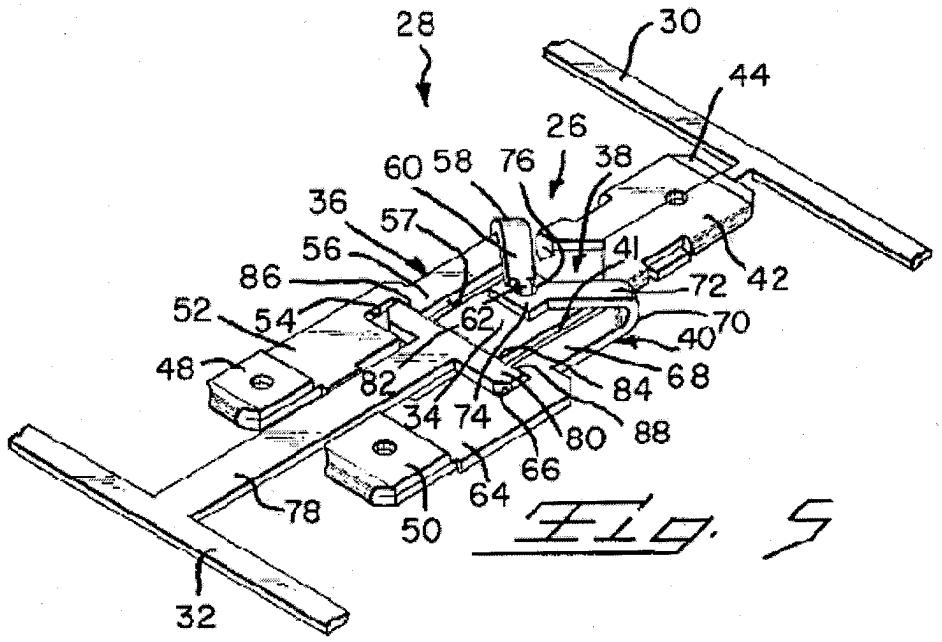

Fig. 5

This positioning of connectors 62 and 74 does not involve positioning on "opposite sides" of the semiconductor element as with independent claim 3, and as applicable to similar limitations in independent claims 4 and 13 as well. The positioning of connectors 62 and 74 also does not permit securing "a semiconductor element between said connection conductors" as with independent claim 1, and as applicable to independent claim 10.

The Examiner's Answer implicitly acknowledges this lack of correspondence at page 15, and attempts to assert correspondence to the term "opposite" by asserting that two points on a

common surface can face one another, while ignoring other aspects of the limitations used in connection with the term opposite. Specifically, the Examiner's Answer asserts that the term "opposite is defined as directly facing each other," and goes on to assert that contact points at a center and periphery in the '864 reference (as in Fig. 5 above) face each other. Appellant submits that this assertion fails to address the claims at hand, including limitations directed to "opposite sides" of a semiconductor element as in each of independent claims 3, 4 and 13. In accordance with the Examiner's own definition of the term "opposite," these "opposite sides" would thus be sides that need to "face each other," which is consistent with Appellant's specification and figures (*e.g.*, as with opposite sides of a semiconductor element). The Examiner's interpretation thus contradicts Appellant's specification and ignores the claims as a whole.

Regarding independent claims 1 and 10, the center and periphery points to which connectors 62 and 74 connect are not positioned such that the chip is secured "between" the connectors, and the Examiner has provided no explanation whatsoever as to how these connectors would secure the chip between one another. In accordance with the Examiner's definition, it would appear that contact points at the center and periphery of a common side of a chip are incapable of "securing" the chip in accordance with the claimed invention. As to the Examiner's Answer's reference to a "contact point on the underside of the chip at point 24" (see Figure 3), this point is on the chip itself, and is not relevant to connectors 62 and 74, or to securing the chip between the connectors as it is on the opposite side of the chip. Moreover, the underlying support structure at this contact point 24 (*e.g.*, at portion 34 in Figure 5) is not part of an end portion of a connection conductor as in claims 1 and 10; rather, this underlying structure at portion 34 is coupled directly to the lead frame at opposing ends that extend away from the support structure.

Further regarding the Examiner's attempt to assert that Appellant's argument "has a logical fallacy in that if the two end portions (62 and 74) connected to the same side of the chip … then they would either connect to the same contact point or to each other," Appellant notes that no such argument was made. Appellant simply noted that the end portions 62 and 74 "connect to the same side of a chip" as discussed above, which does not correspond to connectors on "opposite sides" of the chip, and further renders the end portions incapable of securing a chip as claimed.

In view of the above, the rejections and related discussion in the Examiner's Answer fail to establish correspondence to the claimed connection conductors. Appellant therefore requests that the rejections be removed.

B. The § 102(b) Rejections Have Failed To Establish Correspondence; The Central Underlying Support In The '864 Reference Does Not Freely Extend To Secure A Semiconductor Element As Claimed.

To the extent that the Examiner is relying upon the underlying support structure 34 as one of the claimed connection conductors (*see* Figure 5 above), Appellant submits that this support structure is neither an end of a connection conductor nor a freely extending end as claimed. Referring to Figure 4 (copied below), the cited connector including central supporting region 34 is fixed at both ends (*e.g.*, 42', 78) and is engaged to carrier strips 30 and 32.

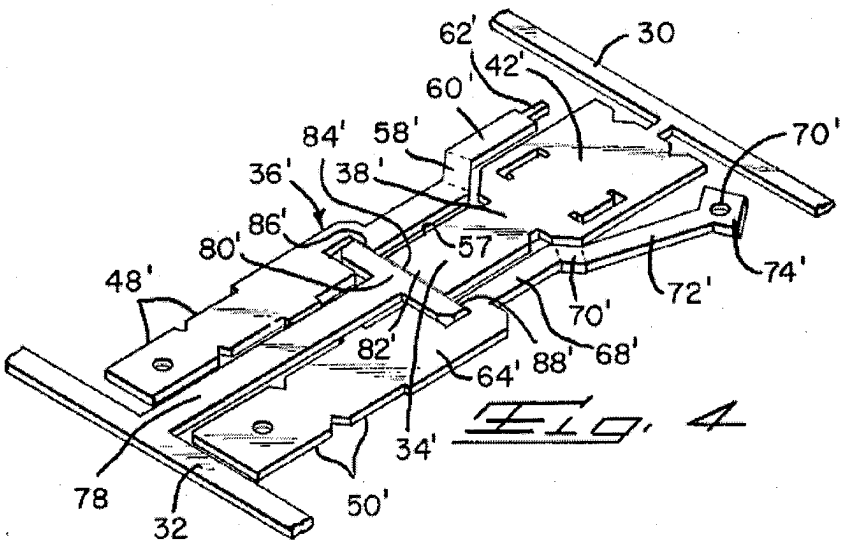

Fig. 4

The Examiner's Answer attempts to address this lack of correspondence by asserting that the central supporting region 34 is "freely extending" in reference to Figure 1, after the asserted lead frame has been removed. However, by removing the lead frame the resulting structure cannot correspond to claim limitations directed to a lead frame or to connection conductors that are a perimeter of the frame. Accordingly, the cited portions of the '864 reference involving the underlying central support region 34, including that shown in Figures 4 and 5, fail to correspond to claim limitations including those directed to two end portions that respectively engage

opposite sides of a semiconductor element, and within a lead frame as claimed. Appellant therefore requests that the rejections be reversed.

C. The § 102(b) Rejections Have Failed To Establish Correspondence; The Asserted Lead Frame In The '864 Reference Does Not Form A Perimeter Around Connection Conductors As Claimed.

The Examiner has failed to establish correspondence to limitations directed to a lead frame that extends around a perimeter of connection conductors, as the cited lead frame involves parallel supports that do not form a perimeter at all. For example, the alleged lead frame "perimeter (30, 32)" in the Examiner's Answer extend in a parallel direction (*see* Figures 4 and 5 above), thus failing to establish a perimeter around connection conductors or otherwise. This arrangement permits the formation of multiple connector components next to one another, as is consistent with Figure 1 of the '864 reference.

As consistent with well-known definitions of the term "perimeter," the term perimeter refers to a "boundary" or "a path that surrounds an area." This is also consistent with supporting example embodiments and figures in Appellant's specification. Interpreting this term in a manner different from well-known definitions and further in a manner that contradicts Appellant's specification is impermissible under § 102(b) and M.P.E.P.§ 2111. Accordingly, the Examiner's attempt to interpret the parallel lines 30, 32 in the '864 reference as a perimeter in accordance with the claimed invention, including limitations directed to connectors having a non-engaging end portion "within a perimeter of the frame" (*see* independent claim 1) are improper. The § 102(b) rejections are therefore improper and should be removed.

D. The § 102(b) Rejections Of Claims 5 And 13 Are Improperly Based Upon An "Obvious To Try" Assertion.

The Office Action's apparent attempt (see page 13) to address Appellant's traversals regarding these matters is further inappropriate because it amounts to an unsupported "Obvious to Try" assertion of what the cited conductors "would have to go through," without providing actual correspondence to these limitations (in violation of § 102, yet further failing to show motivation/suggestion under § 103). Such a rejection has been reviewed and assessed adversely by the *In re Kubin* court which explains that the "obvious to try" standard may not be applied where one would have "to vary all parameters or try each of numerous possible choices until one

possibly arrived at a successful result, where the prior art gave either no indication of which parameters were critical or no direction as to which of many possible choices is likely to be successful." *In re Kubin* (Fed. Cir. April 3, 2009), *interpreting KSR*.[1] See also M.P.E.P. § 2143(E), and *Gillette Co. v. S.C. Johnson & Son, Inc.*, 919 F.2d 720, 725 (Fed. Cir. 1990).

As applicable here, while one of skill in the art could try a multitude of different manners in which to make a connection, nothing in the record supports the Examiner's conclusion that one of skill in the art would necessarily make a connection as claimed. For instance, nothing in the rejections of record or in the Examiner's Answer explains how the cited portions of the '864 reference would necessarily need to be bent "along a further bending axis extending substantially parallel to the bending axis and at a distance therefrom corresponding approximately to the thickness of the semiconductor element." The Examiner's Answer attempts to address this issue by over-simplifying the limitations at issue to a degree of bending (*e.g.*, 90 degrees), but completely misses these and other limitations relating to the bending. This overly-broad thinking is exactly that which has been rejected by the *In re Kubin* Court as giving "either no indication of which parameters were critical or no direction as to which of many possible choices is likely to be successful." Accordingly, the § 102 rejection of claims 5 and 13 is also improper and should be reversed.

E. The § 103 Rejections Are Improper Because The References Cannot Be Combined As Asserted, And Teach Away From The Same.

The § 103 rejection of claims 8 and 14 is improper because the cited references teach away from the Office Action's proposed combination, as established by Appellant's traversals of record and uncontroverted in the Office Action. The Examiner's previous attempts to address this teaching away amounts to an unrelated argument about what claims 8 and 14 discuss, but fails to address Appellant's traversals identifying improprieties with the proposed combination of references, the impropriety of which is not dependent upon Appellant's claims. The Examiner's Answer similarly fails, in either addressing terms that are different than those in the claim limitations, or addressing the wrong issue.

As previously discussed, combining the references as asserted to arrive at the claimed invention would entail moving the member 30 as consistent with the Office Action. However,

[1] *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398 (U.S. 2007)

the '022 reference explicitly teaches away from such movement in teaching that member 30 is fixed in place. The Examiner's Answer attempts to assert that limitations in claim 8 do not involve moving, in attempting to define the term "pushed" as "press against forcefully without moving." However, this interpretation ignores the claim limitations as a whole, which indicate that the "semiconductor element is pushed between the connection conductors by means of a pusher member." Accordingly, the semiconductor element is indeed moved, and the Examiner's proffered definition is irrelevant. The cited references therefore fail to correspond.

Further regarding claim 14, the Examiner's Answer attempts to address Appellant's traversals regarding the teaching away due to moving of the member 30, by asserting that claim 14 does not mention "moving a member." Appellant submits that this response is not relevant, as it is the proposed combination of references that results in moving a member, which the cited '022 reference teaches away from.

The proposed combination of references thus directly contradicts the purpose and teachings of the '022 reference. Consistent with the recent Supreme Court decision in *KSR (cited above)*, M.P.E.P. § 2143.01 explains the long-standing principle that a § 103 rejection cannot be maintained when the asserted modification undermines either the operation or the purpose of the main reference - the rationale being that the prior art teaches away from such a modification. *See KSR at* 1742 ("[W]hen the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be non-obvious."). Under M.P.E.P. § 2143.01, the rejections should be reversed.

F. The § 103 Rejections Are Improper Because The Cited References Do Not Correspond As Asserted.

As consistent with the above discussion of the impropriety of the § 102(b) rejections in Sections A-D, the § 103(a) rejection of claims 8 and 14 (which is also based upon the '864 reference and respectively depend from independent claims 3 and 13) is improper because the Office Action has not established correspondence in the cited '864 reference, either alone or in combination with the '022 reference. None of the asserted references provides correspondence to a lead frame having non-engaging end portions that electrically connect to opposite sides of a semiconductor element, connection conductors that are located within an outer perimeter of a frame, and connectors that respectively freely extend to secure a semiconductor element.

The cited references further fail to provide correspondence to claims 8 and 14 as asserted, as the Office Action has (again) cited to multiple figures and discussion without providing an explanation as to which portions of the references discuss limitations (*i.e.*, those directed to a hole and to a pusher member). Appellant has also reviewed the references for these limitations but cannot ascertain (operable) disclosure of these and other claim limitations. For instance, the cited portions of columns 8 and 9 of the '022 reference do not appear to discuss any pusher member or moving any semiconductor element, which is consistent with the Office Action's indication (*see* page 14) that "[t]he word "push" can be defined to "press against forcefully without moving." While Appellant appreciates the Examiner's definition, this definition fails to provide correspondence to claim limitations directed to pushing a semiconductor element "between the connection conductors" (*i.e.*, by moving the element). Accordingly, neither reference discloses moving a semiconductor element with a pusher member as claimed, and the § 103 references should be reversed.

IV. Conclusion

In view of the above and the underlying Appeal Brief, Appellant submits that the rejections of claims 1-10 and 12-16 are improper and therefore requests reversal of the rejections as applied to the appealed claims and allowance of the entire application.

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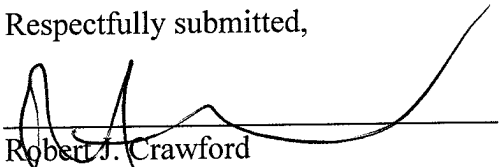
Respectfully submitted,

By: 

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